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November 30, 2012

Ms. Marlene H. Dortch
Secretary, Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Re: **Notice of Ex Parte Communication** in the Matter of WC Docket No. 11-42.

Dear Ms. Dortch,

On November 29, 2012, Tom Koutsky, Chris McGovern and I, of Connected Nation, met with Octavian Carare, James Eisner, Garnet Hanly, Eric Ralph, Kim Scardino, Jay Schwarz, Rodger Woock and Suzanne Yelen of the Wireline Competition Bureau. During the meeting we discussed the research paper *Let's Make A Deal: Price Sensitivity and Willingness to Pay in the American Broadband Market* authored by members of the Connected Nation research team, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2033415.

The research paper evaluates extensive survey data collected by Connected Nation across a number of states as part of the State Broadband Initiative grant program. These data focuses on the millions of Americans who remain disconnected and do not subscribe to broadband in the home. Among other things, the paper analyzes the degree to which price is a key barrier to broadband adoption and estimates a price at which an optimal number of price sensitive households would be willing to subscribe to the service.

The enclosed presentation of the paper and related research was discussed during the meeting.

In response to questions from FCC executives, we also submit results from survey research in Puerto Rico conducted by Connected Nation under the SBI grant program. Full results of this research can be found at the Connect Puerto Rico website <http://www.connectpr.org/survey-results/residential>.



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Pursuant to Commission rules, please include a copy of this filing in the above-referenced docket. Should you have any questions, please feel free to contact me directly.

Sincerely,

s/Raquel Noriega

Director, Public Policy

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Let's Make a Deal: Price Sensitivity and Optimal Subsidies among Broadband Non-Adopters

Nov. 29, 2012



ACCESS



ADOPTION



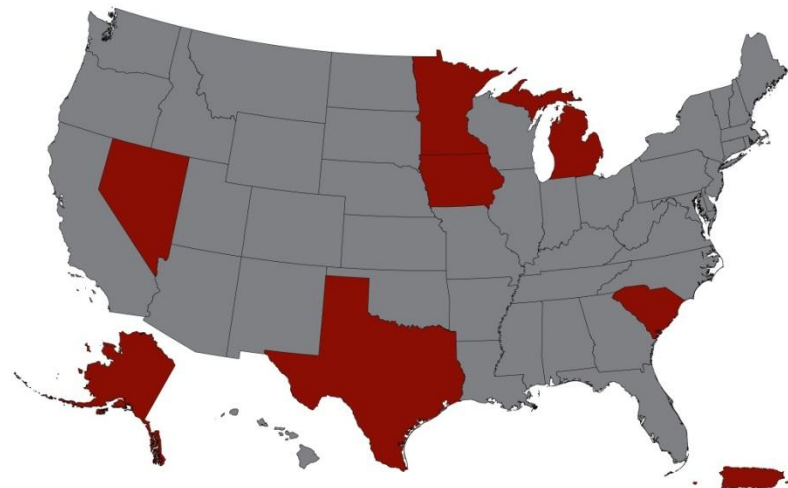
USE

OUTLINE

- **Connected Nation Survey Data**
 - Overview
 - Summary statistics
- **Binary logistic regression results**
 - TPRC Model
 - Expanded Model
- **Van Westendorp Price Sensitivity Analysis to determine how much price sensitive non-adopters would be willing to pay for home broadband service**

DATA

- In 2011, Connected Nation conducted random digit dial (RDD) telephone surveys of 15,082 adult heads of households across seven states.
- In 2012, Connected Nation conducted a similar survey across Puerto Rico.
- Samples included both landline and cell phone numbers and were weighted based on age, gender, and county of residence (rural or non-rural).
- These surveys were funded by the National Telecommunications and Information Administration (NTIA) as part of the State Broadband Initiative (SBI) grant program.

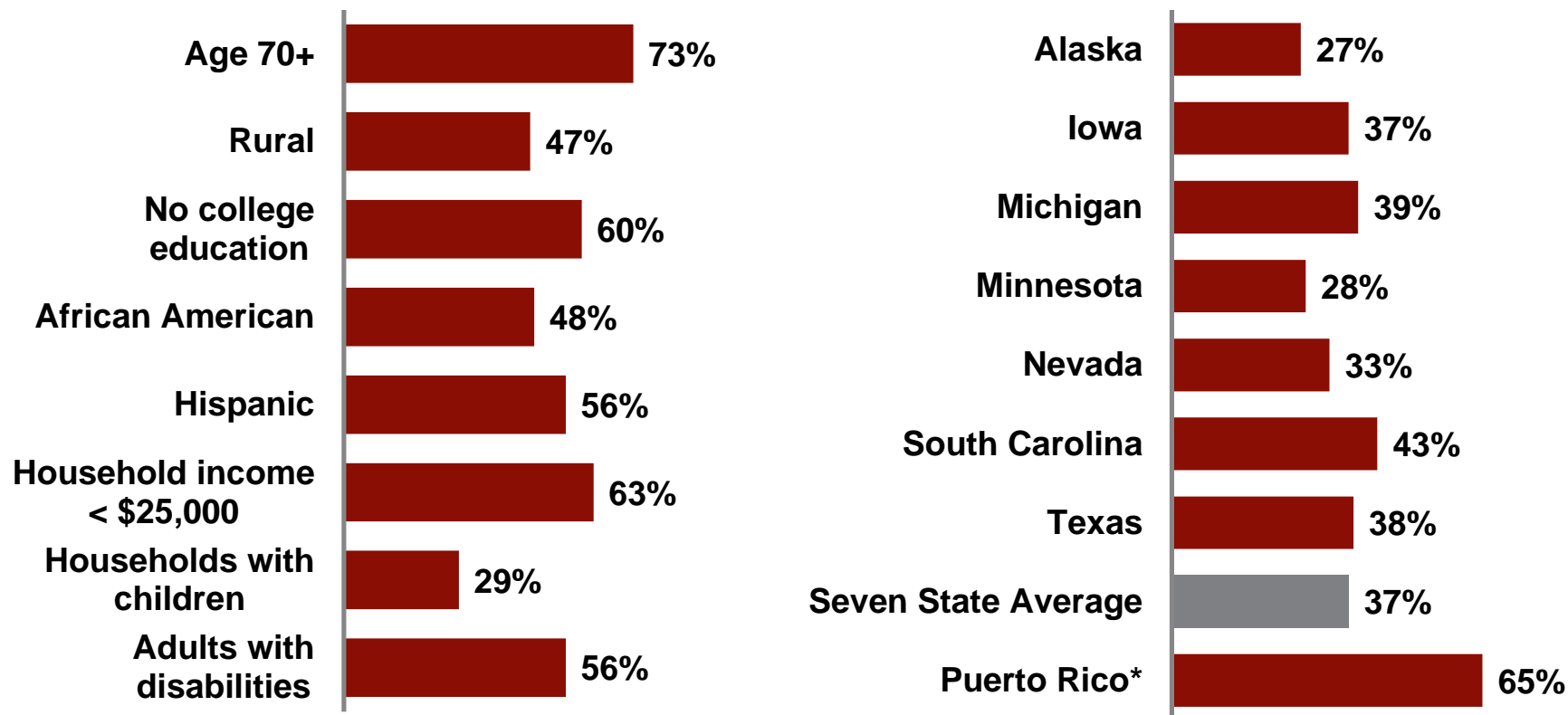


SAMPLE DISTRIBUTION

| State / Territory | Sample (n) | Rural | African American | Hispanic | Household Income <\$25,000 | Household Income \$25,000-\$74,999 | Household Income \$75,000+ | Households with Children |
|--------------------------|---------------|--------------|------------------|--------------|----------------------------|------------------------------------|----------------------------|--------------------------|
| Alaska | 1,751 | 665 | 50 | 67 | 479 | 661 | 283 | 412 |
| Iowa | 2,400 | 1,312 | 52 | 37 | 785 | 855 | 162 | 292 |
| Michigan | 2,400 | 815 | 206 | 57 | 826 | 796 | 149 | 280 |
| Minnesota | 1,900 | 802 | 46 | 38 | 543 | 669 | 177 | 221 |
| Nevada | 1,830 | 404 | 140 | 261 | 622 | 603 | 145 | 287 |
| South Carolina | 2,401 | 773 | 697 | 42 | 943 | 646 | 132 | 381 |
| Texas | 2,400 | 658 | 303 | 947 | 878 | 782 | 228 | 698 |
| Seven State Total | 15,082 | 5,429 | 1,494 | 1,449 | 5,076 | 5,012 | 1,276 | 2,571 |
| Puerto Rico | 2,400 | 429 | 2 | 2,380 | 1,608 | 271 | 17 | 589 |

- The seven state survey took place from June 21 to August 8, 2011
- The Puerto Rico survey took place from February 2 to April 4, 2012

GEOGRAPHIC & DEMOGRAPHIC BREAK-DOWN OF NON-ADOPTERS

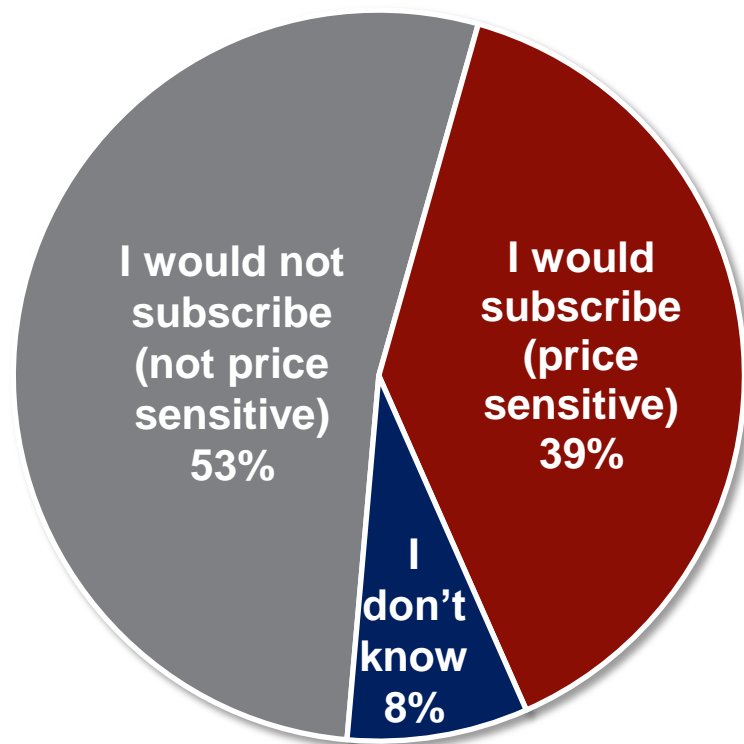


* Puerto Rico data comes from the 2012 Connect Puerto Rico Residential Technology Assessment and is included here as a point of reference. This figure is not included in the average of other states surveyed.

PRICE SENSITIVITY AMONG NON-ADOPTERS

If home broadband service was offered at a price you considered acceptable?

- 53% of non-adopters report not being price sensitive
- Price incentive strategies alone will not resolve the demand gap across America



EXAMINING PRICE SENSITIVITY: TECHNOLOGY OWNERSHIP AND DEMOGRAPHICS

| | All Non-Adopters | Price-Sensitive | Not Price-Sensitive |
|---|------------------|-----------------|---------------------|
| Own a cell phone | 68% | 78% | 60% |
| Own a home computer | 53% | 67% | 41% |
| Subscribe to dial-up service | 25% | 32% | 19% |
| Use the Internet outside of the home | 35% | 39% | 24% |
| Use a cell phone to access the Internet | 21% | 34% | 12% |
| Children living at home | 31% | 45% | 21% |
| Employed | 44% | 57% | 35% |
| Hispanic | 24% | 31% | 20% |
| Average annual household income (self-reported) | \$35,800 | \$37,800 | \$33,400 |
| Average age | 50 | 41 | 56 |

Non-adopters who are price sensitive differ significantly from those who report that they are not price sensitive.

BARRIERS TO BROADBAND ADOPTION

| Top Reported Barrier to Adoption | All Non-Adopters | Price-Sensitive | Not Price-Sensitive |
|--|------------------|-----------------|---------------------|
| The monthly cost of service is too expensive | 18% | 27% | 13% |
| There is nothing on the Internet that I want to see or use | 18% | 7% | 26% |
| The cost of a computer is too expensive | 7% | 9% | 6% |
| Broadband isn't available in my area | 7% | 14% | 3% |
| The Internet is too complicated | 6% | 3% | 8% |
| I don't feel comfortable using a computer | 5% | 2% | 7% |
| I can get access somewhere else | 5% | 6% | 5% |
| Concerns about fraud or identity theft | 4% | 4% | 5% |
| Activation and installation fees are too expensive | 4% | 5% | 3% |
| I don't know anything about broadband | 4% | 3% | 3% |
| I don't go online very often from home | 3% | 2% | 3% |
| Available service is not fast enough | 1% | 1% | 1% |
| Other barrier | 9% | 10% | 8% |
| Don't know/refused | 6% | 4% | 7% |

BINARY LOGISTIC REGRESSION – TPRC MODEL

- Binary logistic regression that measures the marginal impact of geographic and demographic factors on non-adopters' likelihood to be price sensitive
- **Dependent Variable = Price Sensitivity**
 - Value=1 if respondent will be willing subscribe at a price they deem acceptable;
 - Value=0 if respondent will *not* be willing to subscribe, even at a price they deem acceptable
- **Independent Variables**
 - Race/ethnicity, age, presence of children in the home, educational attainment, annual household income, employment status, disability status, and county (or equivalent) of residence (rural or non-rural)
- **Model Fit**
 - Overall model significant at the 95% confidence interval level
 - Goodness of Fit Test: Receiver operating characteristic (ROC) = .749

MARGINAL IMPACT OF DEMOGRAPHIC FACTORS ON NON-ADOPTERS' PRICE SENSITIVITY – TPRC MODEL

| Demographics | B | S.E. | Wald | Df | Sig. | Odds Ratio |
|--|---------------|--------------|---------------|----------|--------------|--------------|
| Race/Ethnicity (ref: White, non-Hispanic) | | | 24.353 | 4 | 0 | |
| African American | 0.322 | 0.073 | 19.27 | 1 | 0 | 1.38 |
| Asian | -0.212 | 0.23 | 0.854 | 1 | 0.356 | 0.809 |
| Hispanic | 0.176 | 0.077 | 5.192 | 1 | 0.023 | 1.193 |
| Other | 0.202 | 0.114 | 3.118 | 1 | 0.077 | 1.224 |
| Age (ref: Age 18-34) | | | 375.44 | 3 | 0 | |
| Age 35-54 | -0.414 | 0.075 | 30.799 | 1 | 0 | 0.661 |
| Age 55-69 | -0.777 | 0.082 | 88.935 | 1 | 0 | 0.46 |
| Age 70 or older | -1.876 | 0.103 | 333.67 | 1 | 0 | 0.153 |
| Educational attainment (ref: Advanced or Professional Degree earned) | | | 101.46 | 4 | 0 | |
| Less than high school | -0.743 | 0.116 | 40.695 | 1 | 0 | 0.476 |
| High school graduate | -0.527 | 0.102 | 26.546 | 1 | 0 | 0.59 |
| Some college | -0.125 | 0.104 | 1.448 | 1 | 0.229 | 0.883 |
| College graduate | -0.125 | 0.109 | 1.315 | 1 | 0.252 | 0.883 |
| Presence of children (ref: Households with no children at home) | 0.488 | 0.061 | 63.215 | 1 | 0 | 1.63 |

= significant at 95% confidence

MARGINAL IMPACT OF DEMOGRAPHIC FACTORS ON NON-ADOPTERS' PRICE SENSITIVITY – TPRC MODEL

| Demographics | B | S.E. | Wald | Df | Sig. | Odds Ratio |
|--|---------------|--------------|---------------|----------|-------------|--------------|
| Employment (ref: employed full-time or part-time) | | | 47.316 | 4 | 0 | |
| Retired | -0.419 | 0.07 | 36.085 | 1 | 0 | 0.657 |
| Not working due to disability | 0.081 | 0.088 | 0.851 | 1 | 0.356 | 1.084 |
| Unemployed | -0.047 | 0.088 | 0.29 | 1 | 0.59 | 0.954 |
| Other | -0.016 | 0.106 | 0.023 | 1 | 0.879 | 0.984 |
| Annual household income (ref: income \$75,000 or more) | | | 20.05 | 3 | 0 | |
| Less than \$25,000 | -0.215 | 0.083 | 6.681 | 1 | 0.01 | 0.806 |
| \$25,000 to \$49,999 | 0.024 | 0.08 | 0.088 | 1 | 0.767 | 1.024 |
| \$50,000 to \$74,999 | 0.017 | 0.091 | 0.036 | 1 | 0.849 | 1.017 |
| Rural status (ref: Non-Rural) | 0.179 | 0.048 | 13.747 | 1 | 0 | 1.196 |
| Disability status (ref: no disability) | 0.081 | 0.088 | 0.851 | 1 | 0.356 | 1.084 |
| Constant | -0.106 | 0.066 | 2.585 | 1 | 0.108 | 0.9 |

= significant at 95% confidence

BINARY LOGISTIC REGRESSION – EXPANDED MODEL

- Binary logistic regression that measures the marginal impact of geographic and demographic factors on non-adopters' likelihood to be price sensitive
- **Dependent Variable = Price Sensitivity**
 - Value=1 if respondent will be willing subscribe at a price they deem acceptable;
 - Value=0 if respondent will *not* be willing to subscribe, even at a price they deem acceptable
- **Independent Variables**
 - Race/ethnicity, age, presence of children in the home, educational attainment, annual household income, employment status, and county (or equivalent) of residence (rural or non-rural)
 - Added: Computer ownership, use of the Internet outside the home, use of the Internet via cell phone, self-reported main barrier to home broadband adoption, expanded income brackets.
- **Model Fit**
 - Overall model significant at the 95% confidence interval
 - Goodness of Fit Test: Receiver operating characteristic (ROC) = 0.811

MARGINAL IMPACT OF DEMOGRAPHIC FACTORS ON NON-ADOPTERS' PRICE SENSITIVITY – EXPANDED MODEL

| Demographics | B | S.E. | Wald | Df | Sig. | Odds Ratio |
|---|--------|------|---------|----|------|------------|
| Computer ownership (ref: no computer at home) | .635 | .069 | 85.694 | 1 | .000 | 1.887 |
| Internet use someplace other than home (ref: no use outside of home) | .581 | .069 | 70.002 | 1 | .000 | 1.787 |
| Use the Internet via cell phone (ref: No Internet use via cell phone) | .402 | .070 | 32.475 | 1 | .000 | 1.494 |
| Main barrier to broadband adoption (ref: Cost) | | | 516.694 | 4 | .000 | |
| Digital literacy | -1.040 | .089 | 137.744 | 1 | .000 | .353 |
| Relevance | -1.618 | .091 | 314.829 | 1 | .000 | .198 |
| Availability | .491 | .109 | 20.368 | 1 | .000 | 1.633 |
| Other | -.938 | .092 | 103.476 | 1 | .000 | .392 |
| Race/Ethnicity (ref: White, non-Hispanic) | | | 17.463 | 4 | .002 | |
| African American | .366 | .100 | 13.345 | 1 | .000 | 1.442 |
| Asian | -.174 | .286 | .371 | 1 | .543 | .840 |
| Hispanic | .216 | .104 | 4.344 | 1 | .037 | 1.241 |
| Other | .271 | .165 | 2.698 | 1 | .100 | 1.311 |
| Age(ref:18-34) | | | 83.920 | 3 | .000 | |
| 35-54 | -.199 | .096 | 4.274 | 1 | .039 | .820 |
| 55-69 | -.399 | .110 | 13.272 | 1 | .000 | .671 |
| 70 or older | -1.179 | .140 | 71.152 | 1 | .000 | .308 |

= significant at 95% confidence

MARGINAL IMPACT OF DEMOGRAPHIC FACTORS ON NON-ADOPTERS' PRICE SENSITIVITY – EXPANDED MODEL

| Demographics | B | S.E. | Wald | Df | Sig. | Odds Ratio |
|--|-------------|-------------|---------------|----------|-------------|--------------|
| Educational attainment(ref: Advanced degree) | | | 9.198 | 4 | .056 | |
| Less than high school | -.315 | .155 | 4.124 | 1 | .042 | .730 |
| High school graduate | -.334 | .132 | 6.456 | 1 | .011 | .716 |
| Some college | -.159 | .132 | 1.450 | 1 | .228 | .853 |
| College graduate | -.198 | .138 | 2.070 | 1 | .150 | .820 |
| Presence of children (ref: no children at home) | .295 | .081 | 13.172 | 1 | .000 | 1.343 |
| Employment (ref: employed full-time or part-time) | | | 24.207 | 4 | .000 | |
| Retired | -.187 | .094 | 3.964 | 1 | .046 | .829 |
| Disabled, not working outside the home | .417 | .122 | 11.649 | 1 | .001 | 1.517 |
| Unemployed | -.085 | .123 | .473 | 1 | .492 | .919 |
| Other not employed | .178 | .142 | 1.572 | 1 | .210 | 1.195 |
| Annual Household Income (ref: \$75,000 or more) | | | 9.271 | 5 | .099 | |
| Less than \$15,000 | .177 | .125 | 1.982 | 1 | .159 | 1.193 |
| \$15,000 to \$24,999 | .027 | .120 | .052 | 1 | .819 | 1.028 |
| \$25,000 to \$34,999 | .069 | .117 | .346 | 1 | .556 | 1.072 |
| \$35,000 to \$49,999 | .255 | .112 | 5.217 | 1 | .022 | 1.290 |
| \$50,000 to \$74,999 | .009 | .112 | .006 | 1 | .938 | 1.009 |
| Rural status (ref: Non-rural) | .151 | .065 | 5.314 | 1 | .021 | 1.163 |
| Constant | .043 | .085 | .255 | 1 | .613 | 1.044 |

 = significant at 95% confidence

IMPLICATIONS

- Price sensitivity is significantly different across various “vulnerable” demographics on the wrong side of the digital divide
- Price-incentive broadband adoption programs will have different results across these demographic groups
- Policy makers or marketing strategists should complement price incentive strategies with programs addressing other barriers to entry such as awareness campaigns, digital literacy training, or free/reduced hardware
- If we rely on price subsidies alone, we will not close the digital divide

VAN WESTENDORP PRICE SENSITIVITY ANALYSIS

- **Marketing technique to analyze the price sensitivity of goods or services across a given population. Survey approach that asks four price-related questions from which cumulative distributions are derived:**
 - At what price would you consider the product to be so expensive that you would not consider buying it? (Too expensive)
 - At what price would you consider the product to be priced so low that you would feel the quality couldn't be very good? (Too cheap)
 - At what price would you consider the product starting to get expensive, so that it is not out of the question, but you would have to give some thought to buying it? (Expensive/High Side)
 - At what price would you consider the product to be a great buy for the money? (Cheap/Good Value)
- **Based on these distributions, a range of acceptable prices and a Van Westendorp Optimal Price Point (VOPP) is estimated.**
- **VOPP is the price point at which an equal number of respondents describe the price as exceeding either their upper (too expensive) or lower limits (too inexpensive).**
 - “Optimal” implies that there is an equal tradeoff in extreme sensitivities to the price at both ends of the price spectrum
 - Market research experts interpret VOPP as the price which maximizes demand while generating the highest possible revenue

BENEFITS AND LIMITATIONS OF THE VAN WESTENDORP PRICE SENSITIVITY ANALYSIS

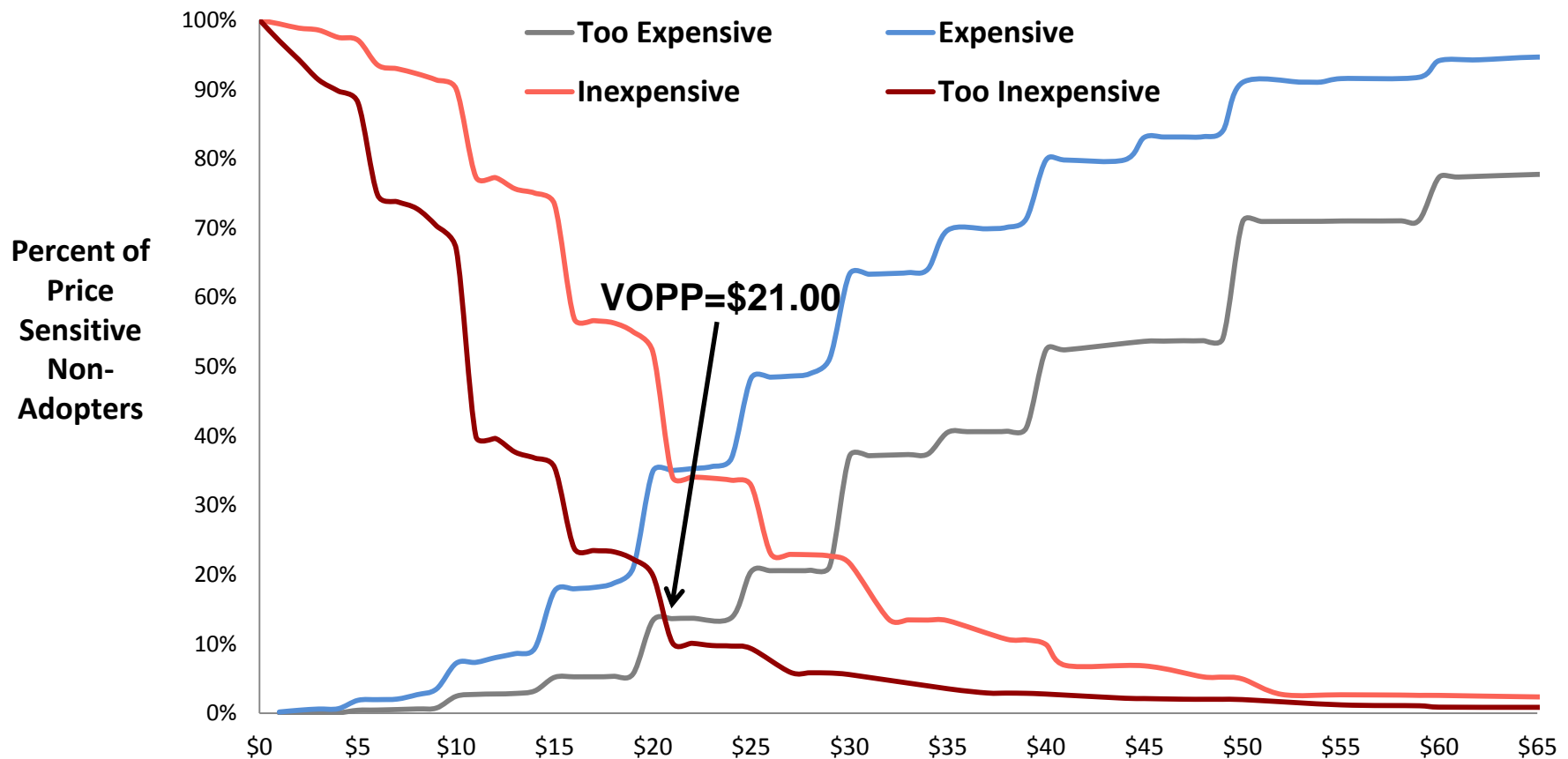
Benefits

- Well established tool among market researchers designed to estimate entry prices for new products or services or untapped market segments
- Provides a more accurate estimate of what consumers are willing to pay than simply asking “How much would you pay for product X.”
- Can be used to estimate target subsidies or price discounts under a price-incentive program targeting non-adopter

Limitations

- Not an economic price estimate. Results are derived using standard marketing techniques that take no account of cost structures, regulatory rules, or competitive dynamics
- Not a willingness to pay estimate for the overall market. Technique analyzes the purchasing behavior of a subgroup of the population – the non-adopters, or the bottom of the demand pool – not the whole market

VAN WESTENDORP PRICE SENSITIVITY ANALYSIS AMONG PRICE SENSITIVE BROADBAND NON-ADOPTERS



OPTIMAL BROADBAND SUBSIDY OR PRICE DISCOUNT TO TARGET NON-ADOPTERS BY STATE

Based on VOPP estimates and self-reported average price paid for home broadband service

| State | Average Reported Monthly Broadband Price among Current Subscribers | Monthly VOPP for Non-Adopters | Optimal Monthly Subsidy or Price Discount |
|---------------------|--|-------------------------------|---|
| Alaska | \$66.19 | \$26.00 | \$40.19 |
| Iowa | \$47.90 | \$20.00 | \$27.90 |
| Michigan | \$46.90 | \$21.00 | \$25.90 |
| Minnesota | \$49.46 | \$20.00 | \$29.46 |
| Nevada | \$48.36 | \$21.00 | \$27.36 |
| S. Carolina | \$47.93 | \$22.00 | \$25.93 |
| Texas | \$44.00 | \$21.00 | \$23.00 |
| Seven State Average | \$46.30 | \$21.00 | \$25.30 |
| Puerto Rico* | \$47.33 | \$26.00 | \$21.33 |

ESTIMATED BROADBAND SUBSIDY OR PRICE DISCOUNT TO TARGET NON-ADOPTERS - BY STATE

Based on VOPP estimates and self-reported average price paid for home broadband service

| Seven State Average | \$25.30 |
|----------------------------|----------------|
| Income less than \$25,000 | \$25.30 |
| Income \$25,000 or more | \$25.30 |
| Age 18 to 34 | \$24.30 |
| Age 35 to 54 | \$24.30 |
| Age 55 or Older | \$26.30 |
| College Education | \$26.30 |
| No College Education | \$25.30 |
| Employed | \$25.30 |
| Not Employed | \$26.30 |
| Caucasian | \$26.30 |
| Hispanic | \$22.30 |
| Black, or African American | \$25.30 |
| Households with Children | \$25.30 |
| Adults with Disabilities | \$26.30 |

IMPLICATIONS

- Price sensitivity across different demographic groups varies significantly, however, demographic factors do not affect the willingness to pay estimates across different demographic groups
- While different cohorts of non-adopters will respond differently to price incentive programs, retail prices targeting different demographics need not vary
- Geographic factors, by contrast, do matter
 - Willingness to pay differs across various states, and
 - Retail prices differ across different jurisdictions.

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